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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,159	01/29/2004	Byoung-Ok Min	P/923-374	7772

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EXAMINER

CANNING, ANTHONY J

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/769,159

Applicant(s)

MIN, BYOUNG-OK

Examiner

Anthony J. Canning

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>WO 98/53475</u> |

DETAILED ACTION

Request for Continued Examination

1. The request for continued examination to the instant application was entered on 14 August 2006.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Kang (U.S. 2003/0057841 A1; of record).
4. As to claim 1, Kang disclose a lighting apparatus using microwave energy (paragraph 0039), including: a magnetron (see Fig. 2, item 104; paragraph 0039) disposed inside a casing (see Fig. 2, item 100; paragraph 0039), for generating microwave energy (paragraph 0039); a waveguide (see Fig. 2, item 105; paragraph 0039) for guiding microwave energy (paragraph 0045); a resonator (see Fig. 2, item 120; paragraph 0039) providing a resonant region (see Fig. 2, item 121; paragraph 0048) in which the microwave energy is resonated (paragraph 0045); a bulb disposed inside the resonator (see Fig. 2, item 132; paragraph 0052), and filled with a material which emits light (paragraph 0065), when excited by the microwave energy (paragraph 0065);

and a rear mirror (see Fig. 2, item 134; paragraph 0052) integrally the bulb stem (paragraph 0052) and integrally rotatable (paragraphs 0056 and 0057) with the bulb is rotated (paragraph 0056) for forwardly reflecting light rearwardly emitted from the bulb (paragraph 0052).

5. As to claim 2, Kang discloses the apparatus of claim 1. Kang further discloses that the rear mirror is formed in a hemispherical shape having a curved shape (see Fig. 2, item 134; paragraph 0026, the examiner interprets semicircular as hemispherical).

6. As to claim 3, Kang discloses the apparatus of claim 2. Kang further disclose that the bulb is positioned at a focal point of the curved surface of the rear mirror (paragraph 0024).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kang (U.S. 2003/0057841 A1; of record) in view of Levin et al. (WO 98/53475).

9. As to claim 4, Kang discloses the apparatus of claim 1. Kang fails to specifically disclose that the rear mirror is made of a quartz material.

In the same field of endeavor, Levin et al. disclose an electrodeless discharge lamp (see Fig. 1; page 5, lines 9-10), with a rear mirror (see Fig. 1, item 14; page 5, lines) made of a quartz

material (page 5, lines 27-29). Using a quartz reflector is advantageous for its desirable thermal expansion characteristics.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lamp of Kang to include that the rear mirror is made of a quartz material, as taught by Levin et al., for its desirable thermal expansion characteristics.

10. Claims 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang (U.S. 2003/0057841 A1; of record) in view of Turner et al. (WO 97/27617).

11. As to claim 5, Kang discloses the apparatus of claim 1. Kang fails to specifically disclose a fixed mirror fixed to the casing at a rear side of the bulb and having a hole in which a bulb stem rearwardly extended from the bulb is rotatably inserted, for forwardly reflecting light emitted to the rear of the bulb.

In the same field of endeavor, Tuner et al. discloses a lighting apparatus using microwave energy (see Fig. 1, item 10; page 4, lines 25-30) further including a fixed mirror (see Fig. 1, item 50; page 6, lines 24-26) fixed to the casing (see Fig. 1, item 20; page 7, lines 5-7) at a rear side of the bulb (see Fig. 1, item 23; page 7, lines 25-27) and having a hole (see Fig. 3, item 53; page 6, lines 28-29) in which a bulb stem (see Fig. 1, item 25; page 6, lines 28-29) rearwardly extended from the bulb is rotatably inserted (page 5, lines 3-5), for forwardly reflecting light emitted to the rear of the bulb (page 7, lines 27-29). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include a fixed mirror fixed

to the casing at a rear side of the bulb and having a hole in which a bulb stem rearwardly extended from the bulb is rotatably inserted, for forwardly reflecting light emitted to the rear of the bulb, as taught by Turner et al., to define an optically isolated light transmission chamber.

12. As to claim 6, Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. disclose a fixed mirror with a diameter that matches that of the bulb stem (see Fig. 1, items 25 and 50; page 6, lines 28-29). The diameter of the rear reflector of Kang (see Fig. 2, item 135) is much larger than the diameter of the bulb stem (see Fig. 2, item 127). Having the diameter of the fixed mirror smaller than the diameter of the rear mirror will reduce the amount of light lost to the rear of bulb.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the electrodeless lamp of Kang to include a fixed mirror with a diameter that matches that of the bulb stem, to reduce the amount of light lost to the rear of the bulb.

13. As to claim 7, Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is formed in a hemispherical shape having a curved shape (page 7, lines 30-31; convex or concave shapes are hemispherical curved shapes). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

14. Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include a fixed mirror formed in a hemispherical shape having a curved shape, as taught by Turner et al., to define an optically isolated transmission chamber.

15. As to claim 8, Kang and Turner et al. disclose the apparatus of claim 7. Turner et al. further disclose that the bulb is positioned at a focal point of the curved surface of the fixed mirror (page 7, last paragraph, the reflector can be “contoured as desired” a desired effect is having the bulb placed at a focal point of the curved mirror). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include that the bulb is positioned at a focal point of the curved surface of the fixed mirror, as taught by Turner et al., to define an optically isolated light transmission chamber.

16. As to claim 9, Kang and Turner et al. disclose the apparatus of claim 5. Kang further discloses that the rear mirror is formed in a hemispherical shape having a curved shape (see Fig. 2, item 134; paragraph 0026, the examiner interprets semicircular as hemispherical).

17. As to claim 10, Kang disclose the apparatus of claim 9. Kang further disclose that the bulb is positioned at a focal point of the curved surface of the rear mirror (paragraph 0024).

18. As to claim 11, Kang and Turner et al. disclose the apparatus of claim 5. Kang fails to specifically disclose that that the rear mirror is made of a quartz material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to disclose that that the rear mirror is made of a quartz material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ.

19. As to claim 12, Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is made of a ceramic material (page 6, lines 26-28). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include that the bulb is positioned at a focal point of the curved surface of the fixed mirror, as taught by Turner et al., to define an optically isolated light transmission chamber.

20. As to claim 13, Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is made of an optically reflective metal oxide (page 6, line 27). Turner et al. fail to specifically disclose that the optically reflective metal oxide is Al_2O_3 , Si_3N_4 or AlN . It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the optically reflective metal oxide to be Al_2O_3 , Si_3N_4 or AlN , since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ.

Response to Arguments

21. In light of the amendment to claim 1, the examiner has presented new grounds of rejection.

Contact Information

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Canning *ck*
25 August 2006

K. Gnharay
9/1/06